

FIGURE 1

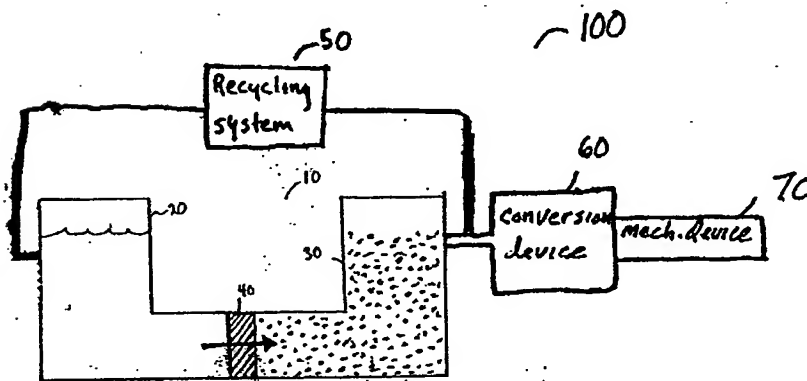


FIGURE 3

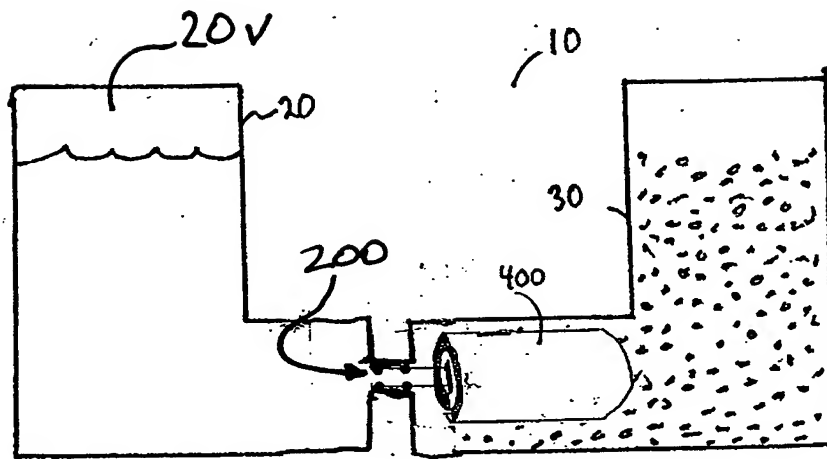


FIGURE 2A

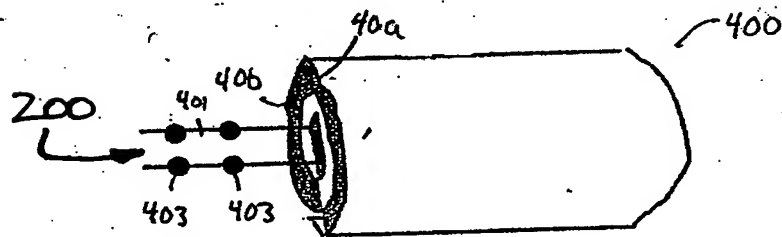


FIGURE 2B

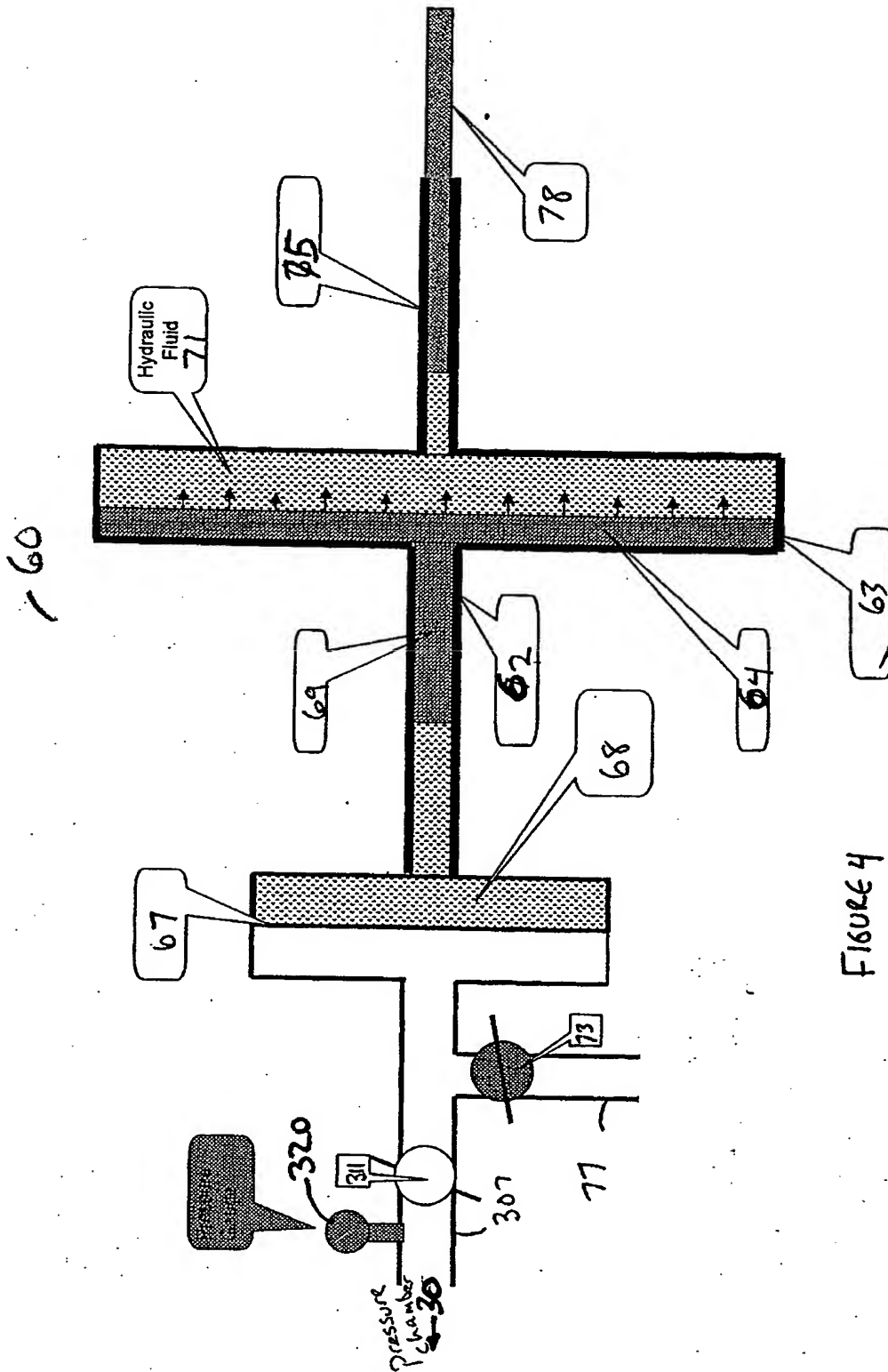
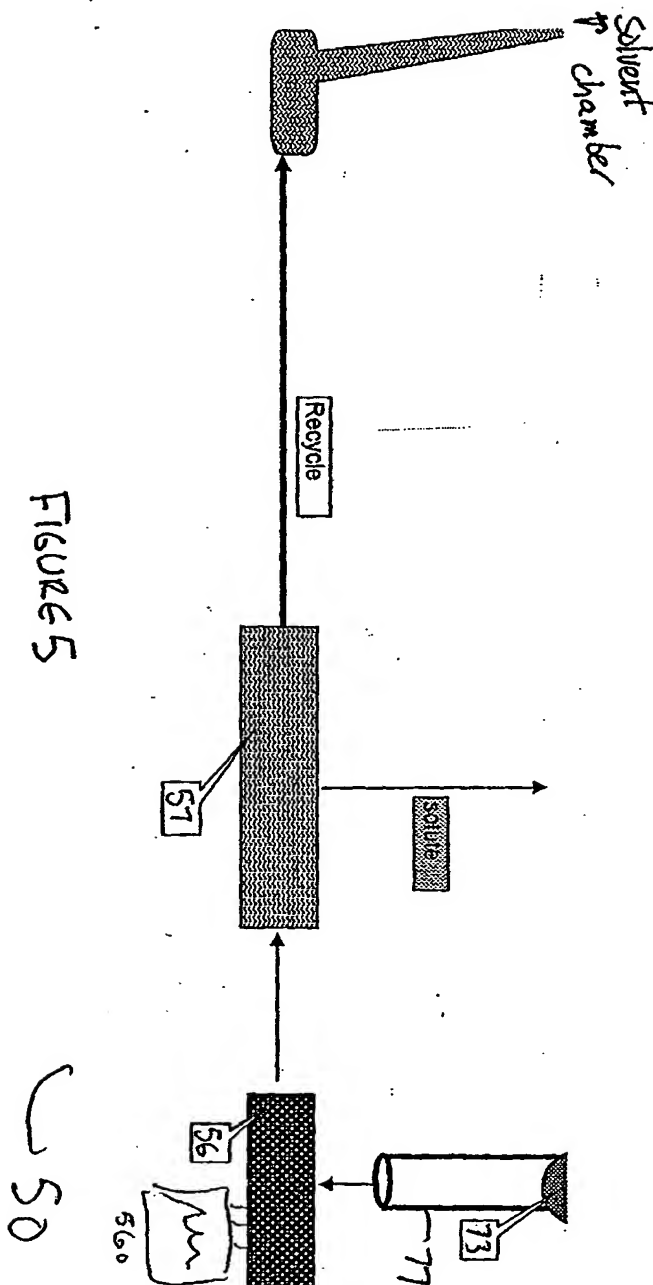


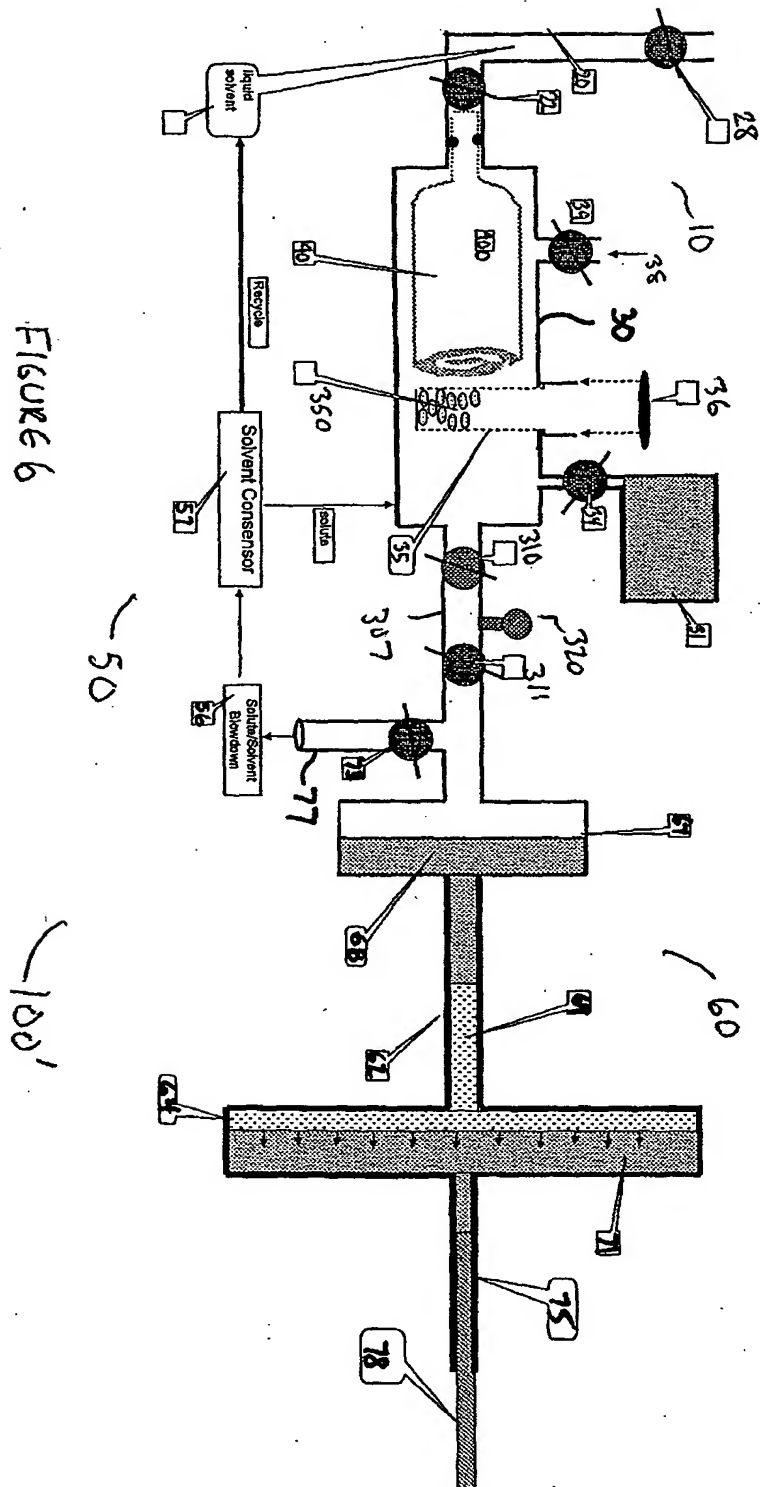
FIGURE 4

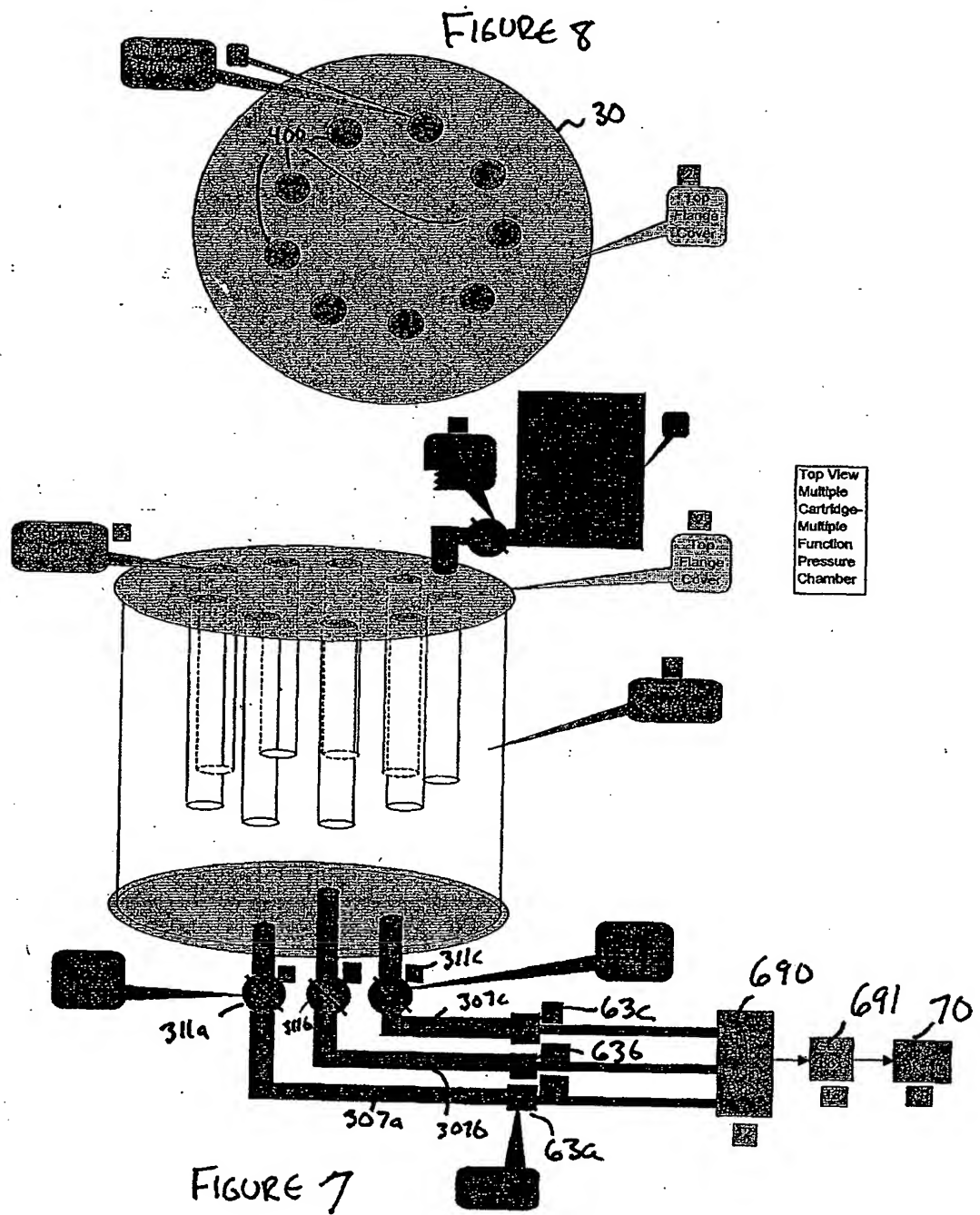


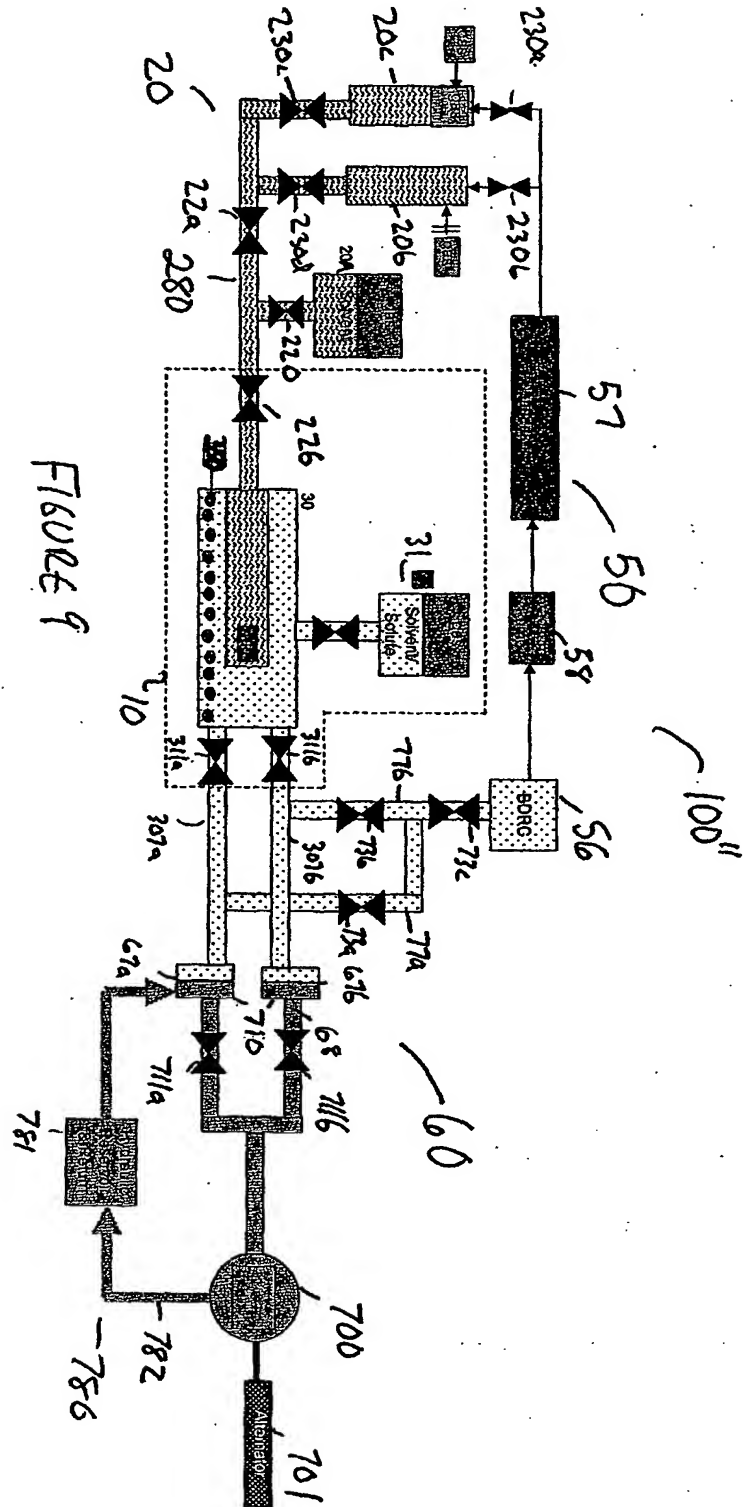
SYSTEM AND METHOD FOR CONVERTING KINETIC ENERGY FROM BROWIAN MOTION OF GASES OR LIQUIDS TO USEFUL ENERGY, FORCE AND WORK

by: Irving W. Devoe

Docket No.: E2002700001







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Figure 10

Calculated Energy Balances for Several Example Solutes and Solvents in an illustrative embodiment of the invention

	AICI3.6H2O	AICI3	Sucrose	NaCl	LiCl	LiCl	FeCl3.6H2O	FeCl3	
	H2O	Methanol	H2O	H2O	H2O	Methanol	H2O	Methanol	
Density Solvent	1.000	0.791	1.000	1.000	1.000	0.791	1.000	0.791	
Solvent molecular Weight	18.0	32.0	18.0	18.0	18.0	32.0	18.0	32.0	
Moles solvent in 1 Kg	55.6	31.2	55.6	55.6	55.6	31.2	55.6	31.2	moles
Concentration of Pure solvent	55.6	24.7	55.6	55.6	55.6	24.7	55.6	24.7	mol/L
Heat capacity, Cp	4.18	2.00	4.18	4.18	4.18	2.00	4.18	2.00	J K ⁻¹ mol ⁻¹
Heat capacity, Cp	1.00	0.48	1.00	1.00	1.00	0.48	1.00	0.48	cal K ⁻¹ mol ⁻¹
Energy spent to raise blowdown to 25°C	5.80	1.24	5.80	5.80	5.80	1.24	5.80	1.24	kJ L ⁻¹
Energy spent to Vaporize at 25°C at vapor pressure	40.65	35.20	40.65	40.65	40.65	35.20	40.65	35.20	kJ mol ⁻¹
Energy spent to Vaporize at 25°C at vapor pressure	0.83	0.24	0.63	0.63	0.63	0.24	0.83	0.24	kWh h ⁻¹ L ⁻¹
Volume of blowdown H2O + solute + H2O of hydration (if any)	305	325	485	251	342	253	405	280	L hr ⁻¹
Volume of solvent in blowdown	54	192	178	210	210	201	179	210	L hr ⁻¹
Molecular elevation of boiling point (K _b)	-0.512	0.830	0.512	0.512	0.512	0.830	0.512	0.830	
Barometric correction	0.073	0.112	0.073	0.073	0.073	0.112	0.073	0.112	
Elevation of the boiling point	3.7	8.2	3.0	3.7	15.7	8.1	2.8	5.5	°C
Energy required to raise boiling point	0.856	0.407	0.701	0.852	3.641	0.403	0.856	0.274	kWh h ⁻¹ L ⁻¹
Energy spent to Vaporize liquid in blowdown 25°C	34.3	46.5	112.2	132.3	134.0	48.6	112.8	50.8	kWh h ⁻¹
Daily Energy spent to vaporize liquid in blowdown @ 25°C	823	1115	2693	3175	3217	1167	2708	1218	kWh day ⁻¹
Power consumption to run pressure pump for Solvent Chamber	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	kWh day ⁻¹
Power consumption to run vacuum pump for solvent recycle	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	kWh day ⁻¹
Total power consumption Internally	827	1119	2697	3179	3221	1171	2712	1222	kWh day ⁻¹
Total power consumption Internally	0.57	0.78	1.87	2.21	2.24	0.81	1.88	0.85	kWh min ⁻¹
Temperature in Solvent Chamber at vapor pressure	22	22	22	22	22	22	22	22	°C
Temperature in Blowdown Receiving Chamber	25	25	25	25	25	25	25	25	°C
Temperature in Condenser at 760 mm Hg	22	22	22	22	22	22	22	22	°C
Solvent Chamber operating pressure	168	168	168	209	209	168	209	168	bar
Solvent Chamber operating pressure	2400	2402	2402	3025	3025	2402	3025	2402	psi
Pressure Chamber operating pressure	207	207	207	250	250	207	250	207	bar
Pressure Chamber operating pressure	3000	3002	3002	3625	3625	3002	3625	3002	psi
Temperature in Pressure Chamber	22	22	22	22	22	22	22	22	°C
Pressure differential across semipermeable membrane (SM)	41	41	41	41	41	41	41	41	bar
Pressure differential across semipermeable membrane (SM)	600	600	600	600	600	600	600	600	psi
Pressure in bladder-type nitrogen pressure buffer tank	207	207	207	250	250	207	250	207	bar
Pressure in bladder-type nitrogen pressure buffer tank	3000	3000	3000	3625	3000	3625	3625	3625	psi
Pressure in blowdown receiving chamber	0.04	0.27	0.04	0.04	0.04	0.27	0.04	0.27	bar
Flowrate of hydraulic fluid to hydraulic motor	101	80	135	70	95	70	113	81	ml sec ⁻¹
Torque	216	216	216	261	261	216	261	216	ft.lbs
Revolutions per time	62	55	82	55	68	42.9	69	49	rpm
Horsepower, bhp (U.S.)	2.55	2.27	3.38	2.74	2.89	1.76	3.41	2.02	HP min ⁻¹
Horsepower, bhp (U.S.)	152.81	138.16	202.89	164.44	173.10	106.81	204.81	121.39	HP h ⁻¹
Efficiency converting torque to electricity	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	
Kilowatts output (min)	1.71	1.52	2.27	1.84	1.94	1.18	2.29	1.36	kW min ⁻¹
Kilowatts output (hour)	102.58	91.38	136.17	110.36	116.17	71.01	137.45	81.47	kW hr ⁻¹
Kilowatts output (day)	2461	2193	3268	2649	2788	1704	3298	1955	kWh day ⁻¹
Net Kilowatt output (day)	1834	1074	571	-530	-433	533	687	733	kWh day ⁻¹
Net Kilowatts output (mon)	49,343	32,442	17,239	(16,008)	(13,063)	16,109	17,734	22,137	kWh mon ⁻¹
Electrical consumption (all-electric home)	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	kWh mon ⁻¹
Home serviced	9.9	6.6	3.4	-3.2	-2.6	3.2	3.5	4.4	